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Research Article

COMPARE THE EFFICACY OF *JEERAKADYA TAILA* AND *GANDHAKADYA TAILA* ON *PAMA* (SCABIES) IN CHILDREN

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KEYWORDS: *Kshudra Kushtha, Pama, Scabies Jeerakadya Taila, Gandhakadya Taila.*

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ABSTRACT

In 21st century unhygienic condition, improper diet, polluted environment due to urbanization makes child more susceptible for various skin diseases. Among them *Pama* is highly contagious and commonest skin diseases mostly occurring in children. *Pama* is one of the types of *Kshudra Kushtha* as the '*Kshudra*' word itself means not having more importance. *Pama* can be compared with scabies which is caused by parasite sarcoptes scabei having similar Clinical features. This study was conducted to evaluate the efficacy of *Jeerakadya taila* and *Gandhakadya Taila* in the management of *Pama*. *Jeeraka, Rasasindhoor* and *Katu taila* are having *Kandughna* and *Kushthagna* properties. It is used for external application only. *Gandhakadya Taila* contains the drugs *Gandhak* and *Katu taila* which are having *Kusthaghna* and *Kandughna, Krumighna* properties. It is also used for external application only. The aim of the study is to find out the Aetio- pathogenesis of *Pama* in children, compare the efficacy of *Jeerakadya Taila* and *Gandhakadya taila* on *Pama* in children, evaluate the efficacy of *Jeerakadya Taila* externally on *Pama,* to find out the efficacy of *Gandhakadya taila* externally on *Pama*. Minimum 60 diagnosed children with *Pama* (scabies) were randomly selected for the clinical study and divided into two groups. Group A (30) Group B (30) children were treated with external administration of *Jeerakadhya taila, Gandhakadhya taila* respectively in the dose of as per requirement depends upon the extension of lesions for a period of 7 days and was applied after bath and when child gets slept. The effect of both therapies on the symptoms of *Pama* was significant. However, the group B has provided comparatively more significant result, it may be because of *Gandhakaday Taila* contains *Gandhak* i.e. Sulphar in it and Sulphar is the best drug for *Pama* (scabies). Better results were found in group B rather than group A. The study suggests that external application of *Gandhakadya Taila* is quite suitable therapy than external application of *Jeerakadya Taila* in *Pama*.

INTRODUCTION

Ayurveda is a sacred medical science which guides us about all the aspects of life in health and disease. Ayurveda is the science of life which deals with prevention of disease first (*Swasthya Swaasthya Rakshanum*) and then eradication of disease (*Aturasya Vikar Prashman*).[1] *Kaumara-bhritya,* is one of the branch of *Ashtanga Ayurveda*[2] which emphasizes the importance of child care. The traditional way of baby and child care was the backbone of the healthy generation and it was beautifully explained by Acharya Kashyapa. *Kaumarabhritya*, is one of the most appreciated branches of Ayurveda, need urgent attention in research, revalidation and practice. Life starts at the time of conception by the union of sperm, ovum and soul together with the mind. Birth is only an event

in an individual's life and the childhood period spans up to the age of 16 years. So, *Kaumarabhritya* is closely related to *Prasuti tantra* also.

The beauty and attraction of an individual lies in the healthy skin along with the general health. Thus, health and beauty are the two faces of a single coin. Skin is the largest organ of the body which is exposed to the external environment. Being one of the five sense organs, it plays a great role in normal well being of human life. As the interface with the surroundings, it plays the most important role in protecting against pathogens. Any ailment in the skin becomes a great handicap in the society because it is visible. Majority of the skin diseases are not fatal but create comparatively greater stress and strain to the patient. So, in present scenario, situation is such that even for minor skin problems people prefers special treatment due to cosmetic and social value. Ayurveda has given importance to skin diseases since the era of *Vedas* and later on in *Samhita Kala* the study of skin diseases were done elaborately and a separate chapter on *Kustha* found the place, but in modern medicine the condition was different.

As per Author Rook in Text Book of Dermatology, it was only in the 19th century, that the subject of Dermatology was developed. Before this well advanced physicians, with few exceptions were little concerned with the skin apart from the exanthematous eruptions of acute fever. Later some scholars like Heberden and Cullen in last 20th century laid the foundation on which the pioneer specialists, Dermatologists of the following century were able to build.

Healthy Children are our nation's pride, but till in 21st century unhygienic condition, improper diet, and polluted environment due to urbanization makes child more susceptible for various skin diseases. Among them *Pama* is highly contagious and commonest skin diseases mostly occurring in children. *Pama* is one of the types of *Kshudra Kushtha*[3] as the '*Kshudra*' word itself means not having more importance. The one reason behind this may be at the time when it is described the spreading or incidence of disease may not be more, so they haven't paid more attention towards this disease. In the ancient Indian books such diseases are termed as highly contagious diseases known as *Aoupasargik Vyadhi*. *Pama* can be compared with scabies which is caused by parasite sarcoptes scabei having similar clinical features.

As the modern drugs are more useful in *Pama* (scabies) providing relief within short period but the recurrence of disease with such drug is more common. So, there is a need to evaluate the efficacy of Ayurvedic drug which will have best anti-scabietic action, within a short period, with negligible side-effect and decreasing the incidence of recurrence of disease. So, this study was conducted to evaluate the efficacy of *Jeerakadya taila* and *Gandhakadya Taila* in the management of *Pama*. According to *Yogaratnakara Jeerakadya Taila*[4] is very effective in *Pama* a type of *Kshudra kushtha* because all the ingredients of the compound i.e. *Jeeraka, Rasasindhoor* and *Katu taila* are having *Kandughna* and *Kushthagna* properties. It is used for external application only i.e. *Abhyanga. Gandhakadya Taila* is also advised in the treatment of the *Pama, Vicharchika* and *Kacchu* by *Yogaratnakara*. *Gandhakadya Taila* contains the drugs *Gandhak* and *Katu taila* which are having *Kusthaghna* and *Kandughna, Krumighna* properties. It is also used for external application only i.e. *Abhyanga*. For the skin disorders external medicaments are mostly useful for the treatment hence the present study "A Comparative clinical study on the external application of *Jeerakadya Taila* and *Gandhakadya Taila* in the management of *Pama* w.s.r. to scabies in Children" is intended to evaluate the efficacy of *Jeerakadya Taila* and *Gandhakadya Taila* in the management of *Pama* (scabies) by applying both the medication externally. The present dissertation is explained as follows.

AIM AND OBJECTIVES

1) To find out the Aetio- pathogenesis of *Pama* in children.
2) To compare the efficacy of *Jeerakadya Taila* and *Gandhakadya taila* on *Pama* in children.
3) To evaluate the efficacy of *Jeerakadya Taila* externally on *Pama.*
4) To find out the efficacy of *Gandhakadya taila* externally on *Pama*.

MATERIALS AND METHOOLOGY

Our classics have emphasized the importance of practical application of theoretical knowledge at various instances. Clinical research enables us to evaluate the quoting of our classics critically, objectively and scientifically so that their validity is established. It is powerful tool which when used properly will help our science to get a strong hold in today's era of evidence based medicine. The present study "A Comparative clinical study on the external application of *Jeerakadya Taila* and *Gandhakadya Taila* in the management of *Pama* w.s.r. to scabies in Children" has been designed with following aim and objectives.

Ethical Clearance: The proposed clinical study was presented in form of synopsis in front of

institutional ethics committee and send to the M.U.H.S. Nashik.

MATERIALS AND METHODS

Selection of the patients: Children attending to *Kaumarbhritya* OPD of our College and Hospital, within the age group of 3-16 years were selected for the clinical study irrespective of their sex, caste, religion and socio-economic status.

Inclusion criteria

1) Age group 3 to 16 years.

2) The children having uncomplicated *Pama* (scabies) only.

II) Exclusion criteria

1) The child suffering from any chronic skin diseases, Immune-Suppressed systemic disorder.

2) Norwegian scabies

Method of Collection of Data

Minimum 60 diagnosed children with *Pama* (Scabies) were randomly selected for the clinical study and divided into two groups.

Procedure of administration of drug

Group A- 30 Children were treated with External administration of *Jeerakadhya taila* in the dose of as per requirement, depending upon the extension of lesions, for a period of 7 days. *Jeerakadhyataila* was applied after bath and when child gets slept.

Group B- 30 Children were treated with External administration of *Gandhakadhya taila* in the dose of as per requirement depends upon the extension of lesions for a period of 7 days. Similar to above group *Gandhakadhya taila* was applied after bath and when child gets slept.

B) Observation period: Clinical responses were assessed on 3th, 5th, 7th days and also on 10th and 15th days of treatment for assessing Reoccurrence of *Pama*.

B) Methods

a) Standardization of Drug: *Jeerakadya Taila*, *Gandhakadya Taila* prepared in R.S.B.K. Department of our college. These drugs were standardized before and after preparation, in the pharmacy of V.D.P. College.

b) Clinical study: Total 60 patients of *Pama* were randomly divided into two groups.

Group	No. of Pt.	Drugs	Mode of administration	Dose	Duration	Advice
Group A	30	*Jeerakadya Taila*	*Bahya Chikitsa* (external application)	1). As per requirement depends upon extend of lesions. 2). Applied after bath and when child gets slept.	7days	Advice for proper hygienic condition and normal diet.
Group B	30	*Gandhakadya Taila*	*Bahya Chikitsa* (external application)	1). As per requirement depends upon extend of lesion. 2). Applied after bath and when child gets slept.	7 days	

Instruction to the Parents / Guardian

1) In both groups patients were not allowed to wear any cloths for about 30 min. after application of drugs for its better absorption.
2) The sensitivity test for both the drugs conducted before initiation of treatment with 0.5 ml test dose. Respective drug was applied and effects were observed for next 3 hr.
3) During the treatment, the children were kept isolated from other infected Children of Scabies and also from the family members who were affected with the scabies. They were also advised for treatment of Scabies.
4) For proper observation and evaluation, the patients were advised to come for follow up on 3rd, 5th, 7th day of treatment and on 10thand 15th day of treatment to assess the recurrence of disease.
5) They were strictly advised, not to give any other medication during the trial except for most essential ones.

2) Criteria of Assessment: Parameters and observations based on patients experience, signs and symptoms and local examination were recorded on case paper in tabular form before, during and after treatment. Parameters were graded from 0-3 to know the efficacy of the treatment only.

Observations and Parameters

Parameters		Observations				
		1st day of treatment	**3rd day of treatment**	**5th day of treatment**	**7th day of treatment**	**10th day of treatment**
	Sukshma, Shyava, Arunavarni, Pitika (Papules, Vesicles, Black head papules)					
a	No papules, vesicles, and black head papules - 0					
b	Mild - 1					
c	Moderate - 2					
d	Severe -3					
	Parameters	**Observations**				
		1st day of treatment	3rd day of treatment	5th day of treatment	7th day of treatment	10thday of treatment
	Kandu paridaha (intensive pruritus)					
a	No intensive pruritus - 0					
b	Mild - 1					
c	Moderate - 2					
d	Severe - 3					
	Srawa (Watery Discharge)					
a	No *Srawa* - 0					
b	Mild - 1					
c	Moderate - 2					
d	Severe - 3					

NOTE –Patients were Call on 10thand 15th days of treatment to check the recurrence of disease.

Parameters of Assessment

a) *Shyava Aruna varni pitika* (Black head papules, vesicles)

- Grade 0 -No Black head papules, vesicles any over body.
- Grade1- Two-Three Black head papules, vesicles present over only one part of body.
- Grade 2- More than Two-Three Black head papules, vesicles but countable, present over more than two part of body but not reaches to genital organ.
- Grade3- Uncountable Black head papules, vesicles present more than two part of body and reaches to genital organ i.e. present all over body.

b) *Kandu Paridah* (Pruritus)

- Grade 0-Absent pruritus
- Grade 1-Occasional pruritus
- Grade 2-Persistant, do not disturb routine
- Grade 3-Persistant, disturb routine work

c) *Strawa* (secretion)

- Grade 0- Absent secretion
- Grade 1- Mild occasional oozing
- Grade 2- Moderate oozing after some pressure
- Grade 3- Sever oozing without pressure

Investigations-As *Pama* (scabies) is clinical diagnosis so there is no need of investigations,

Observation and Results

This section includes the scrutiny of the observations found during the present study. The outcome of the clinical trial is also set under this section. Both of the observations and results are given below in demographic profile presented in tabular forms and charts.

Effect of Therapy: The signs and symptoms were observed before and after treatment in both the A and B Groups, which contains entire treatment Completed 30 patents in each. The Obtained data was taken and analyzed statistically to get the results.

Table 1: Effect of the therapy on *Pitika* in Group A

Days	Total no. of patients of *Pama* having *Pitika*	Relief	%	Non Relief	%
3rd Day	30	2	07 %	28	93 %
5th Day		11	37 %	19	63 %
7th Day		18	60 %	12	40 %

In Group A there was a reduction of *Pitika* in 60 % children, after the treatment with *Jeerakadya Taila* for total 7 days.

Table 2: Effect of the therapy on *Pitika* in Group B

Days	Total no. of patients of *Pama* having *Pitika*	Relief	%	Non Relief	%
3rd Day	30	09	30%	21	70%
5th Day		20	67%	10	33%
7th Day		25	83%	05	17%

In Group B there was a reduction of *Pitika* in 83 % children, after the treatment with *Gandhakadya Taila* for total 7 days. By considering above obtaining data, made a contingency table for applying CHI square test to draw the inference and difference about *Pitika* in between both the Groups.

Table 3: Contingency table for *Pitika*-On day 7th

Groups	Relief	No Relief	Row Total
Group A - *Jeerakadya Taila*	O_1 18	O_2 12	30
	E_1 21.5	E_2 8.5	
Group B - *Gandhakadya Taila*	O_3 25	O_4 05	30
	E_3 21.5	E_4 8.5	
Column Total	43	17	Grand Total = 60

Then with the help of calculation and CHI square table, the CHI square values obtained such as,

Calculated CHI square value	Table CHI square value	Inference	P Value
4.02	3.84	Significant Result.	< 0.05

Above calculations according to Chi-square test showed that the difference between the results of both groups which is significant under probability 0.05 at 1 degree of freedom. Since p value = 0.045 < 0.05, the level of significance, there is strong evidence to reject the null hypothesis.

Table 4: Effect of the therapy on *Kandu* in Group A

Days	Total no. of patients of *Pama* having *Kandu*	Relief	%	Non Relief	%
3rd Day	30	02	07%	28	93%
5th Day		10	33%	20	67%
7th Day		19	63%	11	37%

In Group A there was a reduction of *Kandu* occurred in 63 % children, after the treatment with *Jeerakadya Taila* for total 7 days.

Table 5: Effect of the therapy on *Kandu* in Group B

Days	Total no. of patients of *Pama* having *Kandu*	Relief	%	Non Relief	%
3rd Day	30	08	27 %	22	73%
5th Day		18	60 %	12	40%
7th Day		26	87 %	04	13%

In Group B there was a reduction of *Kandu* occurred in 87 % children, after the treatment with *Gandhakadya Taila* for total 7 days. By considering above obtaining data from above tables made a contingency table for applying CHI square test to draw the inference and difference about *Kandu* in between both the Groups.

Table 6: Contingency table for *Kandu* - On day 7th

Groups	Relief	No Relief	Row Total
Group A- *Jeerakadya Taila*	O_1 19	O_2 11	30
	E_1 22.5	E_2 7.5	
Group B - *Gandhakadya Taila*	O_3 26	O_4 04	30
	E_3 22.5	E_4 7.5	
Column Total	45	15	Grand Total = 60

Then with the help of calculation and CHI square table, the CHI square values obtained such as,

Calculated CHI square value	Table CHI square value	Inference	P Value
4.34	3.84	Significant Result.	< 0.05

Above calculations according to Chi-square test shows that the difference between the results of both groups was significant under probability 0.05 at 1 degree of freedom. Since p value = 0.037 < 0.05, the level of significance, there is strong evidence to reject the null hypothesis.

Table 7: Effect of the therapy on *Srava* in Group A

Days	Total no. of patients of *Pama* having *Srava*	Relief	%	Non Relief	%
3rd Day	12	03	25%	09	75%
5th Day		07	58%	05	42%
7th Day		08	67%	04	33%

In Group A there was a reduction of *Srava* occurred in 67 % children, after the treatment with *Jeerakadya Taila* for total 7 days.

Table 8: Effect of the therapy on *Srava* in Group B

Days	Total no. of patients of *Pama* having *Srava*	Relief	%	Non Relief	%
3rd Day	13	01	08%	12	92%
5th Day		04	31%	09	69%
7th Day		08	62%	05	38%

In Group B there was a reduction of *Srava* occurred in 62 % children, after the treatment with *Gandhakadya Taila* for total 7 days.

The chi square test for association of two variables or Fisher's exact test is not appropriate because of small sample size was observed in case of sign *Srava* i.e. in this study out of 60 patients, *Srava* was observed in only 25 patients. So, in such cases Likelihood ratio test is used. So, by considering above obtaining data above tables made a Cross frequency table for applying Likelihood ratio test to draw the inference and difference about *Srava* in between both the Groups.

Table 9: Cross frequency table for *Srava*-on day 7th

Groups	Relief	No Relief	Row Total
Group A-*Jeerakadya Taila*	08	04	12
Group B - *Gandhakadya Taila*	08	05	13
Column Total	16	09	Grand Total = 25

Then with the help of calculations and Cross Frequency table, the values obtained such as,

The calculated Likelihood ratio test value = 0.071 at 1 degree of freedom and P value = 0.790.

Since p value = 0.790 > 0.05, the level of significance, there is no strong evidence to reject the Null Hypothesis. So, Null Hypothesis is accepted.

Calculated Likelihood ratio value	P value	Inference
0.071	0.790	No significant Result

The average effect of *Taila* on *Srava* is independent on the type of *Taila.* That is the average effect of *Gandhakadya Taila* on *Srava* is equal to that of *Jeerakadya Taila*.

Table 10: Total effect of the therapy on disease *Pama* (Scabies) in Group A

Days	Total no. of patients having *Pama*	Relief	%	Non Relief	%
3rd Day	13	0	0 %	30	100%
5th Day		10	33 %	20	67 %
7th Day		17	57 %	13	43 %

In Group A there were 57 % of children having relief from *Pama*, after the treatment with *Jeerakadya Taila* for total 7 days.

Table 11: Total effect of the therapy on disease *Pama* (Scabies)in Group B

Days	Total no. of patients having *Pama*	Relief	%	Non Relief	%
3rd Day	30	03	10 %	27	90 %
5th Day		13	43 %	17	57 %
7th Day		25	83 %	05	17 %

In Group B there were 83 % of children having relief from *Pama*, after the treatment with *Gandhakadya Taila* for total 7 days. The average effect of *Taila* on disease *Pama* is dependent on the type of *Taila*.

By considering above obtaining data from above tables made a contingency table for applying CHI square test to draw the inference and difference for disease *Pama* (Scabies) in between both the Groups.

Contingency table for disease *Pama* (Scabies) -on day 7th

Then with the help of calculations and CHI square tables, the CHI square values obtained for above table such as,

Table 12: Contingency table for disease *Pama* (Scabies) -on day 7th

Groups	Relief	No Relief	Row Total
Group A-*Jeerakadya Taila*	$_{O1}$17	$_{O2}$13	30
	$_{E1}$21	$_{E2}$ 09	
Group B - *Gandhakadya Taila*	$_{O3}$25	$_{O4}$05	30
	$_{E3}$21	$_{E4}$09	
Column Total	42	18	Grand Total =60

Calculated CHI square value	Table CHI square value	Inference	P Value
5.08	3.84	Significant Result.	< 0.05

For above mentioned calculations, the Chi-square test shows that, the difference between the results of both groups was significant under probability 0.05 at 1 degree of freedom. Since p value = 0.024 < 0.05, the level of significance, there is strong evidence to reject the null hypothesis.

Table 13: Overall effect of the therapies on disease *Pama* (Scabies)

Effect	Group A		Group B	
	No. of child	%	No. of child	%
Ineffective –Unchanged or No relief at all.	0	0 %	0	0%
Mild improvement –<25% relief.	0	0 %	0	0%
Moderately improvement - 50 - 26% relief.	11	37 %	04	13 %
Markedly improvement – 75 - 51% relief.	04	13 %	05	17 %
Complete Cured - 100% relief.	15	50 %	21	70 %

In group A out of 30 children, 50% children were completely cured while markedly improvement occurred in 13% children followed by moderately improvement occurred in 37 % children and none of the children were found in mild improvement as well as in unchanged at all group where as in group B out of 30 children 70% children were completely cured while markedly improvement occurred in 17% children, moderately improvement occurred in 13 % children and none of the children were found in mild improvement as well as unchanged at all group.

The re occurrence of disease *Pama* (Scabies) was assessed in those patients who were completely cured on last day of treatment i.e. on 7th day of treatment.

Table 14: Total effect of the therapy on reoccurrence *Pama* (Scabies) in Group A

Days	Total no. of patients, completely cure from *Pama*	Reoccurrence	%	Non Reoccurrence	%
10th Day (Early reoccurrence)	13	0	0 %	15	100 %
15th Day (Late reoccurrence)		3	20 %	12	80 %

In the children of Group A there was no re-occurrence of *Pama* on day 10. It indicates there was no early recurrence of disease. On day 15th, out of 15 completely cured patients, the re-occurrence of *Pama* was occurred in only 3 patients.

Table 15: Total effect of the therapy on reoccurrence *Pama* (Scabies) in Group B

Days	Total no. of patients, completely cure from *Pama*	Reoccurrence	%	Non Reoccurrence	%
10th Day (Early reoccurrence)	21	0	0 %	21	100 %
15th Day (Late reoccurrence)		2	10 %	19	90 %

In the children of Group B there was no re-occurrence of *Pama* on day 10. It indicates there was no early recurrence of disease. On day 15th, out of 21 completely cured patients, the re-occurrence of *Pama* was occurred in only 2 patients.

The chi square test for association of two variables or Fisher's exact test is not appropriate because of small sample size was observed in case of recurrence of disease *Pama* i.e. in this study out of total 60 patients of *Pama*, 42 patients were cured, and out of that 42 cured patients recurrence of disease *Pama* was observed in only 5 patients. So, in such cases Likelihood ratio test is used.

So, by considering above obtaining data from above tables made a Cross frequency table for applying Likelihood ratio test to draw the inference and difference about recurrence of disease *Pama* in between both the Groups.

Table 16: Cross frequency table for recurrence of *Pama*-On day 15th

Groups	No recurrence	Recurrence	Row Total
Group A-*Jeerakadya Taila*	12	03	15
Group B - *Gandhakadya Taila*	19	02	21
Column Total	31	05	Grand Total = 36

Then with the help of calculations and Cross Frequency table, the values obtained such as,

Calculated Likelihood ratio value	P value	Inference
0.374	0.790	No significant Result.

The calculated Likelihood ratio test value= 0.374 at 1 degree of freedom and P value = 0.790.

Since p value = 0.790 > 0.05, the level of significance, there is no strong evidence to reject the Null Hypothesis. So, Null Hypothesis is accepted.

DISCUSSION

Concept of *Pama*

The word *Pama* is derived from Pa + Manin which in general mean –*khujali, kharuja*. In this context, this is characterized by eruption of *Shyaw, Arunvarni Pitika* with intensive itching due to *Vimargagamana* of vitiated *Tridosha* to *Twaka, Rakta, Mamsa Dhatu.* The *Pama* is mainly caused by the influence of *Twakadushati*. Essential factor in this condition is the eruption of *Shyaw Arunavarni Pitika* with intensive itching and sometimes with minimal *Strawa* in the region of *Spika, Pani Karpure*.

Pama is the most common *Aoupsargika Roga*. It resembles with the Scabies in accordance with its sign and symptoms such as *Shyaw, Arunvarni Pitika* (Black head papules), *Kandu* (itching) and *Srava* (occasional mild discharge). The site of formation *Pitika* i.e. *Spika, Pani Karpure*, mentioned by *Acharyas* are exactly correlated with the sites of Scabies such as Buttock, hand webs, elbow flexures. In Ayurveda according to Acharya Sushruta*, Pama* comes under *Aoupasargika Roga* i.e. transferred from person to person likewise Modern Science has also explains the mode of transmission of Scabies from person to person. In both the *Charaka Samhita* (Cha./Vi.7/11) and *Sushruta Samhita* (Su./Ni./5/6) *Acharyas* mentioned that *Kushta* can be also caused by the *Krimi*.

Discussion on selection of drugs

Pama is due to the predominance of *Pitta* and *Shleshma* which leads to discoloration of the skin like *Shyava, Aruna* and *Shweta Varna pittika* associated with *Pitta* related symptoms like *paridaha*, *Paka* and *Kapha* related features like *Kandu, Srava, Kleda* etc. hence the treatment was aimed to *Kapha- pittahara* properties.

Ayurvedic texts have different herbal combinations for successful treatment of *Pama*. *Jeerakadya Taila* and *Gandhakadya Taila* had been selected for present study because both the drugs having *Aampachaka, Raktaprasadaka, Kushtaghna, Kandughna, Daha Prasamaka* and *Kaphahara*. These drugs are described in *Yogratnakar Kushtha Chikitsa* page no.230 and 232 respectively.

Discussion on preparation of drugs

Before preparation of both the *Jeerakadya Taila* and *Gandhakadya taila Murchana Samskar* was done. Due to this *Murchana samskara, Katu taila* gets good smell and colour, apart from these, because of *Murchana Samskar*, *Katu taila* gets such a capability to receive more active principles. The *Jeerakadya Taila* was prepared with *Jeeraka, Ras sindhoor, Katu taila* and Water in the quantity such as 1: 0.5 : 8 : 4 respectively. The *Gandhakadya Taila* was prepared with *Gandhak and Katu taila* and Water in the quantity such as 1: 8:4 respectively. The preparation procedure of both *Taila* was conducted for about 5 day (B.R.A.5/1310-1312) so as to break down the fatty chain in *Katu taila*, which results into easy conduction of active principle.

Discussion on selection of Drug form: Both the drugs selected for study are in the *Taila* form. Here *Taila Kalpana* was selected because in this form, drug is easy to apply. Also *Yogavahita, Sanskaranuvarth* properties of *Taila Kalpana* helps in easy conduction of active principles of drugs with which it is prepared. *Taila* also helps to maintain *Twakasarta* and acts as *Rasayana* for *Twaka* by maintaining proper functioning of *Vata dosha*.

Discussion on mode of action drug: Both the drugs i.e. *Jeerakadya Taila* and *Gandhakadya Taila* having properties such as, Anthelmintic,

Antibacterial, Antiviral, Antifungal, Antipyretic, Antibiotic, Insecticidal, Antimicrobial, Hypo-glycemic, Anti-protozoal. The ingredients of these drugs if individually analyzed, are having the same above said pharmacological activities, and so indicated in *Pama*. *Acharya Charaka* states that, certain drugs act through *Rasa*; some through *Veerya*; some through their *Gunas*; some through their *Vipaka* and some through their *Prabhava*. Here these drugs may act due to their *Tikta* and *Katu Rasa* predominant. They also have *Laghu, Ruksha Guna*and *Kapha- Pitta Shamaka* properties, which may help to cure the *Pama*.

At the level of *Dosha*: Because of its *Laghu, Ruksha Guna* and *Tikta, Katu Rasa* (dominant with *Agni, Vayu* and *Akasha Mahabhuta*) act as *Pitta* and *Kaphashamaka*.

At the level of *Agni*: By virtue of its *TikshnaGuna* which is predominant with *Agni, Vayu* and *Akash Mahabhuta. Ushna Veerya, Tikta* and *Katu Rasa* it stimulates *Agni* which in turn stimulates all other *Agni*. In *Pama*, there is mainly *Rasadhatwa Agni* (*Twaka* represents the *Rasadhatwa Agni*) *Dushti* due vitiation of *Pitta* and *Kapha dosha*. This ultimately results in *Ama* formation. This *Ama* obliterates the *Sukshama* pores of *Twacha* and creates *Klinata* which produces characteristic features of *Pama*. Both the *Jeerakadya Taila and Gandhakadya Taila* have properties like*, Tikta, Katu Rasa, Katu Vipaka, Laghu, Tikshna Guna* so, acts as *Agni Dipaka* and *Amapachaka*. This results in to the proper functioning of *Rasadhatwa Agni* which helpsto break the *Samprapti. Tikta Rasa* and *Laghu, Ruksa Guna* helps in destruction of *Pitika* by going in to *Sukshama strotsa* of *Twacha*. Thus, both the drugs i.e. *Jeerakadya Taila* and *Gandhakadya Taila* acts on disease *Pama* and helps to overcome disease process and provides beneficial action. The present work contains Comparative clinical study on the external application of *Jeerakadya Taila* and *Gandhakadya Taila* in the management of *Pama* w.s.r. to scabies in Children.

Discussion on Research design: The study was intended as a randomized, single blind and parallel group observational clinical study for the efficacy of *Jeerakadya Taila* and *Gandhakadya Taila* in the treatment of *Pama* w.s.r. to Scabies in children aged 3-16 yrs with irrespective of their sex, religion and socio economic status.

Discussion on single blind study: The blind method is a part of the scientific methods which is used to prevent research outcomes from being influenced by the observer bias.

Discussion on clinical study method: For the present Clinical study total 68 diagnosed children of *Pama* (Scabies) (fulfilling the inclusion criteria) were selected for the study, out of which 8 patients (4 patients each from group A and B) were dropped out. The 60 patients were randomly divided into two equal groups i.e. Group A and Group B. In Group A external application of *Jeerakadya Taila* was given and for Group B external application of *Gandhakadya Taila* was advised. Treatment was carried out for 7 days. Observations like their age, sex, socioeconomic status, personal history etc. were documented. Complaints observed before and after the treatment were recorded separately in tabular form.

Discussion on observations

Age: Maximum numbers of children in this study were in the age group of 7-8 years i.e. total 28%. This was followed by 23% of children in the age group of 9-10 years, while 22% of children were of 3-4 years and 15% of children were in the age group of 11-12 years. Only 10 % children were in the age group of 5-6 years and no children registered in the age groups of 13-16 years. It was observed that this disease was common in young children due to improper hygiene and found occasionally in older children.

Sex: 63 % of the children were males while 37 % were females in Group A and 60% of males, 40% of females were in Group B. It was observed that chance of disease is comparatively more in males. It can be concluded that male children were exposed to different factors than females which can cause the disease e.g. play more outdoor games, spend more time with pet animals.

Religion: Maximum children were Hindus (93%) followed by Muslims (7%) and none were Christians (0%). The fact is that this area where study was conducted is having maximum numbers of Hindus. Also the patients were selected by a random sampling method, hence such data was obtained.

Occupation of parents: Among the parents of 60children of both the groups 36 (60%) were agriculturists, 8 (13%) were doing business and 16 (27%) were service holders. This observation shows that most of the children were belonging from agriculture family and associated with improper hygiene.

Socio-economical status: Poverty and poor hygiene is the main cause for this disease because they are almost linked with over-crowding. People belonging to poor and middle class society cannot afford a better life style and healthy diet which pulls

them into different health problems. In present study it was observed that maximum number of children i.e. 77% were from middle socio-economic status, 23% were from poor class and none were from upper class.

Educational Status: Out of 60 children 48 (80%) were school going followed by only 12 (20%) children were not going to school because they were in preschool age group. Hence the probable chances of infection gets increases, it might be from school friend contacts that had Scabies as they sit, play and eat together in school which may spread *Pama* from one to another.

Habitat: The study showed that, there was more involvement of children from rural (45%), than semi urban (38%) and urban area (17%) respectively. This may be because the area where the study conducted was rural and semi urban type.

Previous history of *Pama* (Scabies): 12 children in Group A, 13 children in Group B had previous history of scabies i.e. total 25 (42%) children had previous history of scabies. It indicates recurrence of disease is common.

Medicinal history about *Pama* (Scabies): According to treatment history, out of 42% children who had previous history of scabies total 38 % children took allopathic treatment for Scabies. Which indicates recurrence of disease *Pama* (Scabies) is quite common with allopathic treatment. Remaining 4% children did not take any kind of treatment.

Birth History: Out of total 60 children 37 (62%) children were full term and 18 (30%) children were preterm, at the time of birth. Whereas remaining 5 (08%) children were post term at the time of birth. Due to prematurity child may suffer through many complications in their early childhood life, which affects the immunity of child and hence predisposes to the infection.

Birth Weight: Maximum 43% children were having normal birth weight followed by 30% children were having LBW whereas birth weights of 27% children were not known. Due to low birth weight child may suffers through many complications in their early childhood, which affects the immunity of child and hence predisposes to the infection.

Weight of children: Maximum 50% children were under weighed, followed by 42% children were having normal weight whereas 08% children were over weighed. Improper nourishment is responsible for the low weight of child. Lower weight to the age of child may create weakness and which ultimately responsible to lower the immunity of child. So, chances of infection may increase in such under weighed children.

Height of children: Out of 60 children 28 (47%) children were having normal Height, followed by 27 (45%) were less Height children whereas 05 (08%) children were over Height. No relation was found in between the spread of disease and Height.

Developmental mile stone: Maximum children (78%) were having proper developmental mile stone and only 22 % children were having delayed developmental mile stone. But these 22 % children with history of delayed developmental mile stone were not mentally retarded i.e. they were absolute normal children like other. From this it is cleared that Scabies can occur in child who has normal development.

Nutritional status of children: Maximum 55% children were having normal Nutritional Status, followed by 38% children were having Grade-I Malnutrition and 07% children were having Grade-II Malnutrition respectively. Chance of occurrence *Pama* (Scabies) is more in malnourished children because of nutritional status affects immunity of child.

Immunization history: (73%) children were having proper immunization and remaining 27% children having improper immunization. Vaccination protects only specific, vaccine related disease. No vaccination can provide specific immunity for *Pama* (Scabies). So, *Pama* can also occur in children having proper immunization.

Family or contact history: 67% and 63% children were observed with family or contact history in Group A and Group B respectively. A positive family history suggests various factors. *Acharya Sushruta* has mentioned *Kushta* to be an infectious disease and chances of infection are more through their own family members. Also it suggests a particular type of food habits or environmental influences in the family which could cause the disease. According to modern science scabies is spread by sleeping together and over- crowding so family incidence is common in this disease. As *Pama* is contagious disease it shows the co-relation with the history of contact.

Personal Hygiene: Maximum children (75%) were having improper hygiene and only 25% children having proper hygiene. Poor hygiene is predisposing factor to *Pama* (Scabies) for attracting causative organism.

Residential Hygiene: maximum 42% children were having poor residential hygiene, followed by 37% children were having moderate and 21% children were having good residential hygiene

respectively. Poor residential hygiene and contact with unhygienic pet animals are most important predisposing factors for manifestation of *Pama* (Scabies).

***Prakruti*:** Maximum numbers of children were having *Kaphapitta Prakriti* (65 %). *Kapha* and *Pitta Doshas* are considered to be the predominant *Doshas* in the pathogenesis of *Pama*. It is also noted that the *Kandu, Pidika* and *Srava* are the symptoms of vitiated *Kapha* and *Pitta* in *Pama* and they have been encountered in the present study.

***Koshta*:** Maximum number of children were belonging to *Madhyama Koshta* 28 (47%) and 9 (15%) were found belonging to *Krura Koshta* and remaining 23 (38%) were belonging to *Mridu Koshta* in the present study. No explanation can be given for this rather than by chance. The knowledge of *Koshta* is helpful in deciding the treatment modality

Appetite: Among 60 children, 33 (55%) were having moderate appetite, 17 (28%) children were having poor appetite. There is relation in between *Jatharagni* and manifestation of *Tvakaroga*, as *Amanirmana* due to *Mandagni* predisposes to *Pama*.

Dietary Habit: The study revealed that, maximum children were belonging to non vegetarian diet habit (68 %). This may be due to the usage of more oily, fried and chilly foodstuffs as well as unwholesome food by the children of non vegetarian diet. The Childhood is the period of *Kapha* predominant where the influence of non vegetarian diet again helps in easy accumulation and aggravation of *Kapha*.

***Pradhana rasa* in food:** In this study it was observed that maximum no. of children i.e.40 (67 %) were consuming *Madhura Rasa* followed by *Lavana Rasa* in 18 children (30%), *Amla Rasa* in 14 children (23%), *Katu Rasa* in 11 children (18%), *Tikta Rasa* in 05 children (08%) and *Kashaya Rasa* in 02 children (03%) in their diet. *Madhura, Amla* and *Lavana Rasa* in higher doses may aggravate *Kapha, Pitta doshas* and creates *Kha-vaigunya* in skin and also they cause Raktapitta Prakopa, which are considered as *Nidana* of *Kushta*. So, *Rasa Dushti* may have triggered *Pama* and *Kandu*. Excessive *Lavana* is prime cause for *Kushta* described by *Charaka*.

***Sharira Pramana*:** Maximum children 28 (47%) were having *Madhyama Sharira*, 21 (35%) children were having *Hinasharira* and 11 (18 %) were having *Samasharira. Pramana* gives an idea about body built. As such there is no relation of *Praman* with *Pama*.

***Satwa*:** Maximum numbers of children were *Madhyama Satwa* followed by *Pravara* and *Avara Satwa*. This may be due to the association of psychological factors like fear, sorrow, anxiety, irritability etc. observed which may indirectly pre dispose the disease.

Sleep: Among 60 children maximum children 46 (77%) were having disturbed sleep and 14 (23%) were having sound sleep. *Nidra* is among the *Trayopstambh* of life and so improper sleep may disturb the body equilibrium. *Alpa, Khandita Nidra* may suggest that the children were under stressful condition or excess itching during night by itch-scratch-itch cycle.

Pradhana vedana: All 60 children (100%) were presented with *Pitika* and *Kandu*. These symptoms are *Pratyatma Lakshanas* of the disease. *Srava* were noticed in only 25 (42%) children it may be due to individual variation of *Doshas*.

Discussion on Effect of Therapy (Results)

Effect of the therapies on criteria of assessments

On *Pitika* (within groups): In group A, *Pitika* was present in all 30 children before treatment. There was relief occurred in 18 children by 7th day where as 12 children were remained in the no relief category. In Group A there was a reduction of *Pitika* in 60 % children, after the treatment with *Jeerakadya Taila* for total 7 days. In group B, *Pitika* was present in all 30 children before treatment. There was relief occurred in 25 children by 7th day where as 05 children remained in the no relief category. In Group B there was a reduction of *Pitika* in 83% children, after the treatment with *Gandhakadya Taila* for total 7 days.

In between groups: Chi-square test showed that the difference between the results of both groups was significant under probability 0.05 at 1 degree of freedom. Chi -square test has showed a significant association with the 'p' value <0.05. For the sign *Pitika, Gandhakadya Taila* showed more significant result as compared to *Jeerakadya Taila*.

On *Kandu* (within group): In group A *Kandu* was present in all 30 children before treatment. There was relief occurred in 19 children by 7th day where as 11 children remained in the no relief category. In Group A there was a reduction of *Kandu* occurred in 63 % children, after the treatment with *Jeerakadya Taila* for total 7 days. In group B *Kandu* was present in all 30 children before treatment. There was relief occurred in 26 children by 7th day where as 04 children were incorporated in the no relief category. In Group B there was a reduction of *Kandu* occurred in 87 % children, after the treatment with *Gandhakadya Taila* for total 7 days.

In between groups: In case of *Kandu* also Chi-square test showed that the difference between the results of both groups was significant under probability 0.05 at 1 degree of freedom. Chi -square test has showed a significant association with the 'p' value <0.05. i.e. also for the symptom *Kandu Gandhakadya Taila* showed more significant result as compared to *Jeerakadya Taila*.

On *Srava* (within groups): In group A *Srava* was present in 12 children before treatment. There was relief occurred in 08 children after 7th day. In Group A there was a reduction of *Srava* occurred in 67 % children, after the treatment with *Jeerakadya Taila* for total 7 days. In group B *Srava* was present in 13 children before the treatment. There was relief occurred in 08 children on 7th day of the treatment where as 05 children were in the no relief category. In Group B there was a reduction of *Srava* occurred in 62 % children, after the treatment with *Gandhakadya Taila* for total 7 days.

In between groups: The Likelihood ratio test shows that the difference between the results of both groups was not significant under probability 0.05 at 1 degree of freedom.

For the sign *Srava*, both the drugs i.e. *Jeerakadya Taila* and *Gandhakadya Taila* showed relief in approximately similar way.

On Overall Effect of the Therapies: In group Aout of 30 children, 50% children were completely cured while markedly improvement occurred in 13% children, moderately improvement occurred in 37 % children and none of the children were found in mild improvement as well as in unchanged at all group where as in group B out of 30 children 70% children were completely cured while markedly improvement occurred in 17% children, moderately improvement occurred in 13 % children and none of the children were found in mild improvement as well as unchanged at all group. Overall effect of therapy was more significant in Group B.

On Reoccurrence *Pama* (Scabies) (within groups): In the children of Group A there was no re-occurrence of *Pama* on day 10. It indicates there was no early recurrence of disease. On day 15th, out of 15 completely cured patients, the re-occurrence of *Pama* was occurred in only 3 patients. In the children of Group B there was no re-occurrence of *Pama* on day 10. It indicates there was no early recurrence of disease. On day 15th, out of 21 completely cured patients, the re-occurrence of *Pama* was occurred in only 2 patients.

In between groups: The Likelihood ratio test shows that the difference between the results of both groups was not significant under probability 0.05 at 1 degree of freedom. The average effect of *Gandhakadya Taila* on recurrence of disease *Pama* is equal to that of *Jeerakadya Taila*.

CONCLUSION

On the basis of the study, following conclusions can be drawn:

- *Pama* being a *Kshudra Kustha* has *Kaphapitta* dominance with its involvement of *Tridosha* which can be evident by observing its signs and symptoms.
- *Pama* in modern parlance has similarity with the Scabies which is common skin disorder.
- In the present study majority of the children were found in the age group of 7-8 years which reflects the incidence of *Pama* comparatively more in this particular age range. Even though, studies of a large group of children were required for the concrete conclusion.
- The incidence of 62% males, 93% Hindu religion, may not have any reasonable cause for the manifestation of the disease *Pama*.
- Maximum children had the history of *Virrudhaahara* and *Mandagni* which clearly shows the role of *Ama* formation in the pathogenesis of the disease *Pama Kushta*.
- Majority of the children of the study were consuming *Madhura Rasa* dominant food, followed by *Lavana, Amla* and *Katu Rasas* reflects that these *Rasas* are the supplementary agents for the causation of *Pama.*
- Family history or contact history was supporting in many children because *Pama* was said to be *Aoupsargika Roga* hence it is having the nature of spreading from one person to another.
- Poor personal hygiene, poor residential hygiene, poor eating habits, poor living standards, unawareness about health are the important etiological factors for infestation of *Pama*.
- Large numbers of children (65%) were having *Kaphapitta Prakriti* reveals that the children of this *Prakriti* were more prone to the disease *Pama*.
- The higher incidences of *Pama* in *Madhyama Sharira* (47%) and *Madhyama Sattva* (65%) have no relation with the manifestation of the disease.
- Involvements of *Kaphaja Lakshanas* were more prevalent in the disease *Pama*.
- Distribution of the patients according to the manifested symptoms showed that *Pidika,*

Kandu, Srava etc. were the signs and symptoms of the disease *Pama,* but the *Pidika* and *Kandu* are the more predominant signs of *Pama* as compared to *Srava*.

- The effect of both therapies on the symptoms of *Pama* was significant. However, the group B has provided comparatively more significant result, it may be because of *Gandhakaday Taila* contains *Gandhak* i.e. Sulphar in it and Sulphar is the best drug for *Pama* (Scabies).
- Thus it can be concluded that, highly significant results were found in both group A and group B, but better results were found in group B rather than group A. It suggests that external application of *Gandhakadya Taila* is quite suitable therapy than external application of *Jeerakadya Taila* in *Pama*.

However, this is only preliminary study conducted as a part of educational research program in small number of patients and in a fixed duration of time. Further multi-centered clinical and experimental studies are required with larger samples to establish the efficacy of these drugs on *Pama*.

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